

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
31 March 2005 (31.03.2005)

PCT

(10) International Publication Number
WO 2005/027875 A1

(51) International Patent Classification⁷: **A61K 9/14** (74) Agent: **STEINBERG, Michael, A.; Ivax Corporation, 4400 Biscayne Boulevard, Miami, FL 33137 (US).**

(21) International Application Number:

PCT/US2004/030724

(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(22) International Filing Date:

18 September 2004 (18.09.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

0321873.2 18 September 2003 (18.09.2003) GB
0403262.9 13 February 2004 (13.02.2004) GB

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

(71) Applicant (*for BB only*): **IVAX CORPORATION [US/US]; 4400 Biscayne Boulevard, Miami, Florida 33137 (US).**

(71) Applicant (*for all designated States except US*): **NORTON HEALTHCARE, LTD. [GB/GB]; Albert Basin, Royal Docks, London E16 2QJ (GB).**

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **ZENG, Xiam-Ming [GB/GB]; 45 Hill Road, Mitcham, Surrey CR4 2HS (GB). WOOLFE, Austen, John [GB/GB]; 31 Emberson Way, North Weald, Essex CM19 6DL (GB). LANGFORD, Alan [GB/GB]; 33A Briscoe Road, Hoddesdon, Herts, EN11 9DG (GB).**

Published:

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **PARTICLES**

(57) Abstract: The invention relates to particles for drug delivery by inhalation, said particles incorporating at least one active ingredient which is non-crystalline. The may be a plurality of active ingredients and moreover the outer surface of the particles may be substantially smooth. By providing non-crystalline particles with an outer smooth surface, a substantially accurate dose of active ingredient(s) can, in use of an inhalation device, be delivered each time the device is discharged, with a free flow and non-agglomeration of the particles. This is brought about by the smooth surface and the lack of a periodic ordered structure typical of a crystalline solid. The invention extends to an inhalation composition, and a pulmonary nasal inhalation device including such a composition.

WO 2005/027875 A1